**Theory Assignment**

**1. Explain the purpose of Flexbox and its benefits for responsive design.**

**Flexbox**, or the **Flexible Box Layout**, is a CSS layout model designed to improve the arrangement of elements in a container, especially when the size of elements is unknown or dynamic. Its main purpose is to provide an efficient way to align and distribute space among items in a container.

**Benefits for responsive design:**

* **Adaptive layouts**: Flexbox automatically adjusts the size and alignment of items to fit different screen sizes.
* **Alignment control**: Makes vertical and horizontal centering easy.
* **Reordering**: Items can be reordered without changing the HTML.
* **Fewer floats or position hacks**: Flexbox simplifies layout code by replacing older techniques.

**2. Describe the main properties of Flexbox**

**flex-direction**

Defines the direction in which flex items are placed in the flex container.

* Values: row (default), row-reverse, column, column-reverse

**justify-content**

Aligns items **horizontally** along the **main axis**.

* Values: flex-start, flex-end, center, space-between, space-around, space-evenly

**align-items**

Aligns items **vertically** along the **cross axis**.

* Values: stretch (default), flex-start, flex-end, center, baseline

**3. Discuss the difference between flex-grow, flex-shrink, and flex-basis.**

| **Property** | **Description** |
| --- | --- |
| **flex-grow** | Defines how much a flex item will **grow** relative to the rest when space is available. |
| **flex-shrink** | Defines how much a flex item will **shrink** when space is tight. |
| **flex-basis** | Sets the **initial size** of a flex item before growing or shrinking. |

**Example:**

css

flex: 1 1 200px;

/\* flex-grow: 1; flex-shrink: 1; flex-basis: 200px; \*/